

ASN (RDA) CHIEF ENGINEER

Interoperability in the Naval TST Acquisition Strategy

Presented To

**NDIA 2002 Interoperability
Conference**

26 March 2002



Dr. C. E. Dickerson
Director of Architecture



Outline

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- The Naval Enterprise for Delivering Capabilities
- Architectural Progress
- Interoperability and Acquisition Strategy

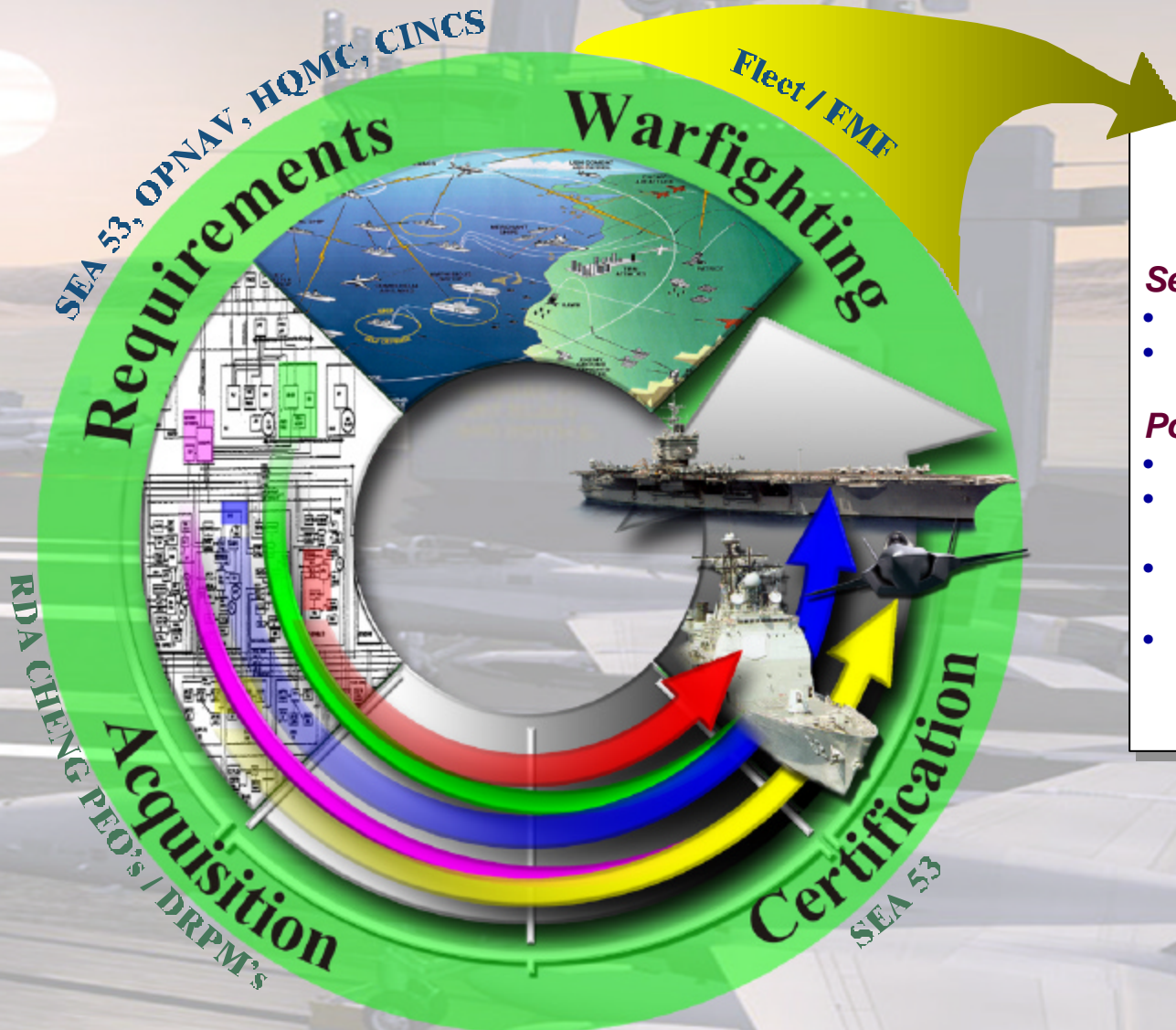
Purpose of Briefing

To Illustrate How the Architectural Methodology Has Been Used to Assess the Interoperability of the TST Naval Family of Systems



Naval Enterprise Activities

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National Military Objectives

Security Strategy

- Deter Aggression Forward
- Defend The U.S.

Policy Goals

- Assure Allies and Friends
- Dissuade Military Competition
- Deter Threats Against U.S. Interests
- Decisively win

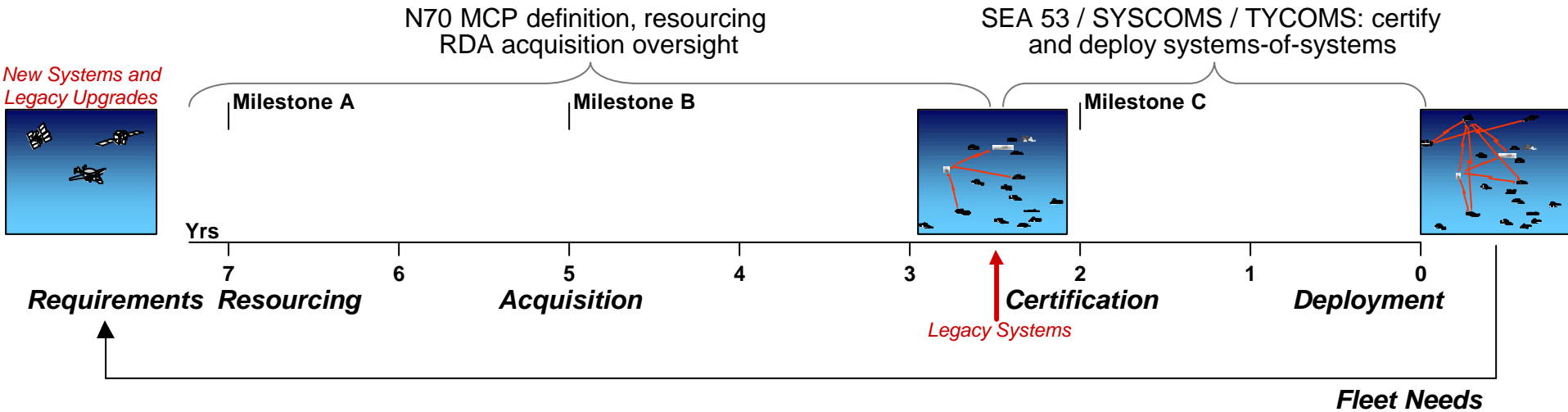
Source: Oct 2001 QDR



Integrating the Family of Systems

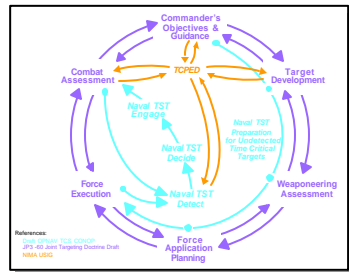
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Notional Acquisition Cycle



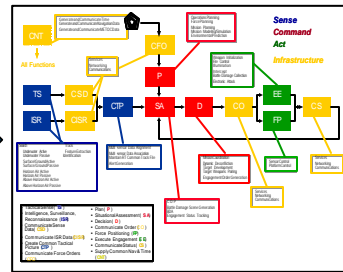
Architectural Development

Conceptual

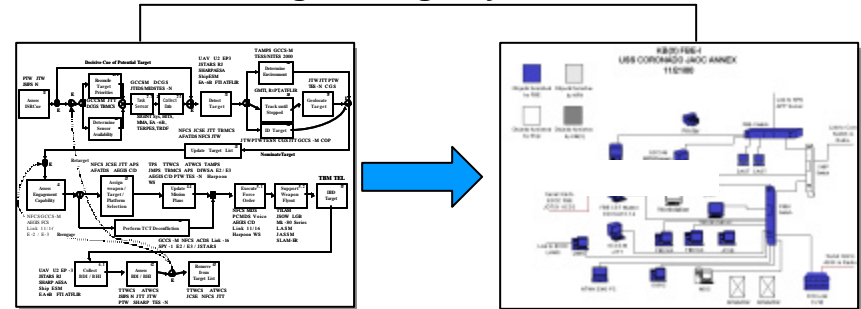


To Be

Functional/Logical



Engineering/Physical



As Is

Architectures Provide the Framework



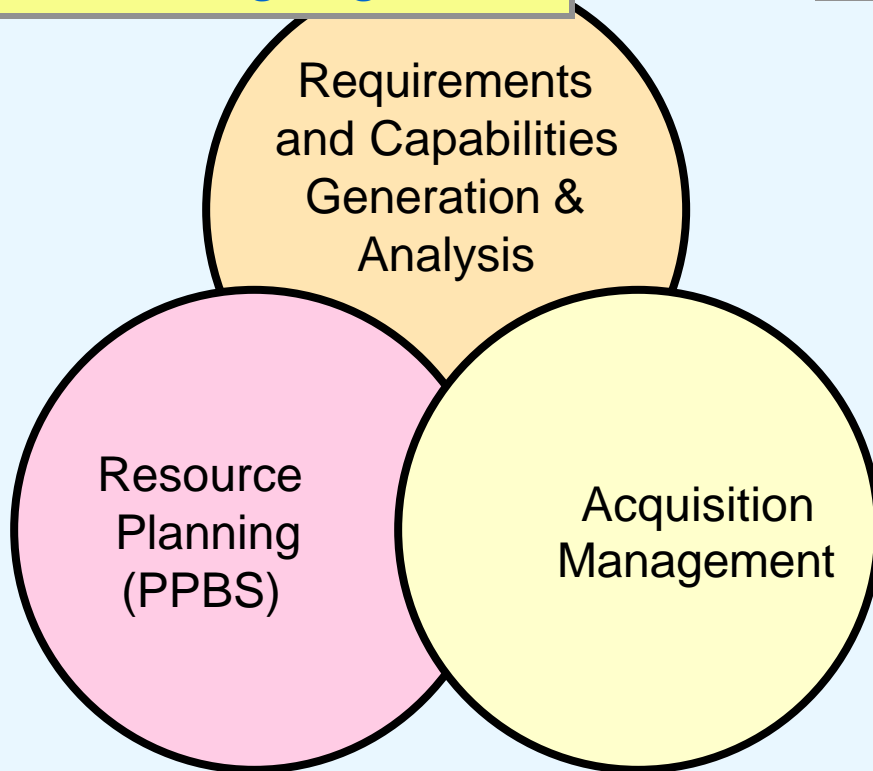
What The CNO BCAPP Is About

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Warfighting Wholeness

How to Bring Together ...



... the key DoD Decision Support Systems ...

- Requirements Integration
 - CONOPS Consolidation
 - Fleet Driven Operational Architectures
 - Consistent Operational Context
- Integrated Capability Architectures
 - Linked to Navy's PPBS Process
 - Linked to Service/Joint Strategy
 - Approved at Highest Levels
- Integrated Decision Support Systems
 - Acquisition Management
 - Requirements Generation
 - PPBS

... Within An Integrated Architecture Framework

Capabilities Based Acquisition Requires Broad Integration of Existing Activities, Based on Architectures

BCAPP – Battleforce Capabilities Assessment and Programming Progress

Source: "Integration, Interoperability and Architectures", CAPT J. Yurchak, Assessment Division (OPNAV N81) dtd 28 Feb 2001



OPNAV N70 MCPs

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N70 Warfighting Wholeness

Current Navy Warfare Sponsors

AW - Air Warfare
C2 - Command and Control
EXW - Expeditionary Warfare
ISR - Intelligence, Surveillance, and Reconnaissance
MCP - Mission Capability Package
SUW - Surface Warfare
T&E - Test and Evaluation
TAMD - Theater Air Missile Defense
USW - Undersea Warfare

ISR MCP

Tactical C2 MCP

Navigation MCP

Homeland Security MCP

TAMD MCP

USW MCP

Time-Critical Targeting MCP

Expeditionary Warfare MCP

Strategic Deterrence MCP

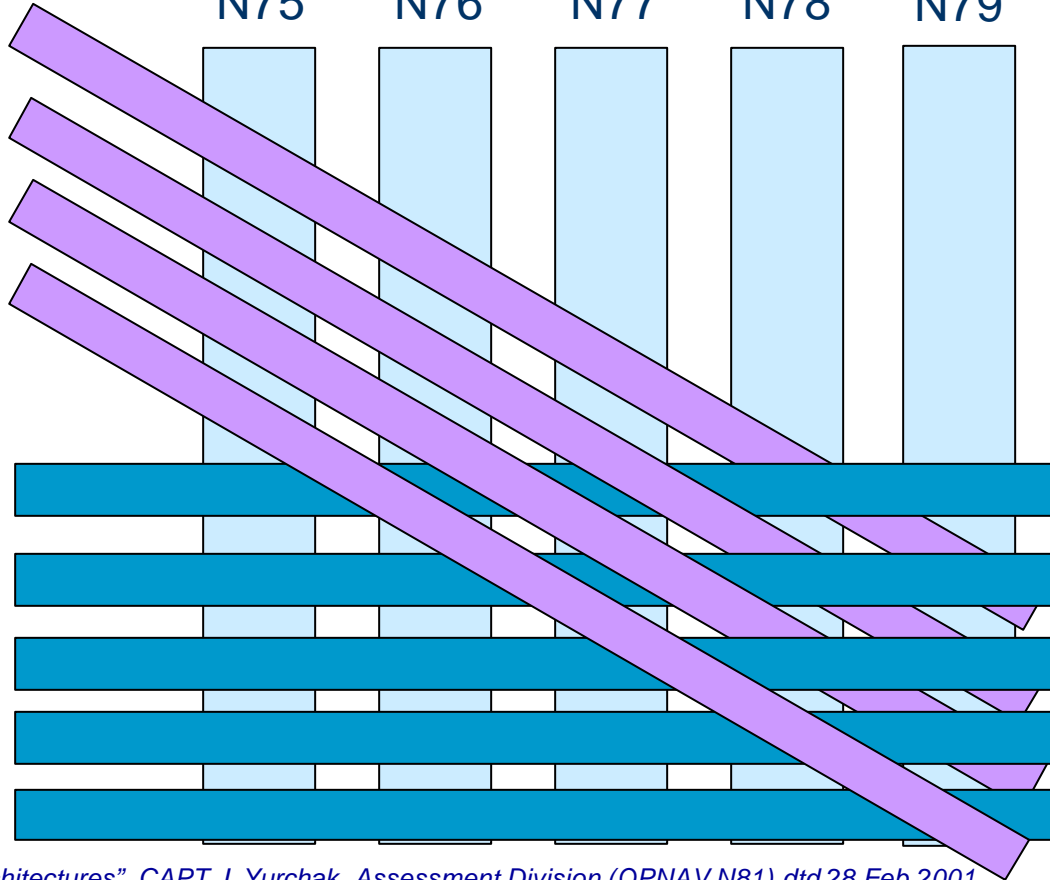
EXW
N75

SUW
N76

USW
N77

AW
N78

T&E
N79



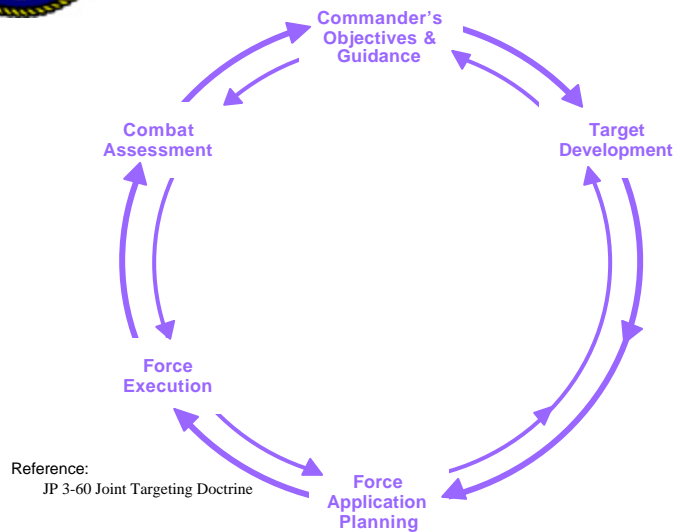
Source: "Integration, Interoperability and Architectures", CAPT J. Yurchak, Assessment Division (OPNAV N81) dtd 28 Feb 2001

MCPs Must Integrate Legacy Systems and Training with Warfare Architectures and Enabling Systems and Technologies

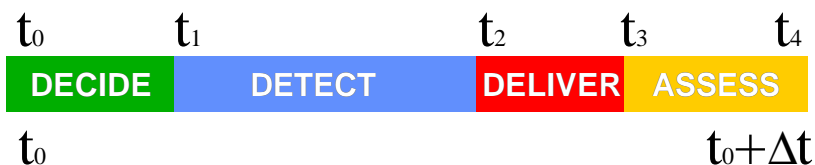


TST Comparison Across the Services

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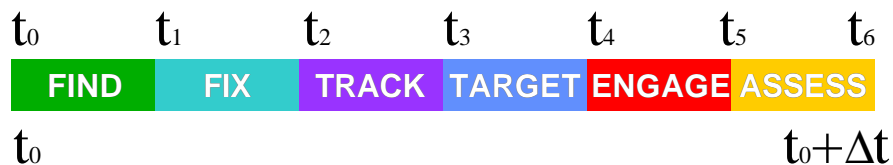


Joint Targeting Process



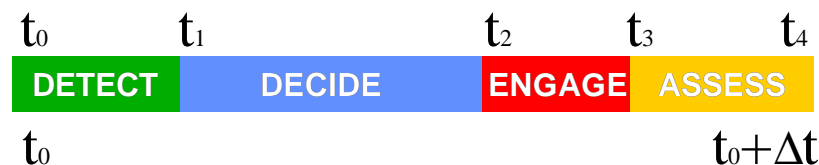
Army/USMC Targeting Process

Ref: JP 3-09, NWP 2-01.11



Air Force TCT Targeting Cycle

Ref: Air Force TCT Brief to USD(AT&L)



Naval TCS Decision Cycle

Ref: Draft OPNAV TCS CONOP

The Primary Differences are in Lexicon for the Top Level Process

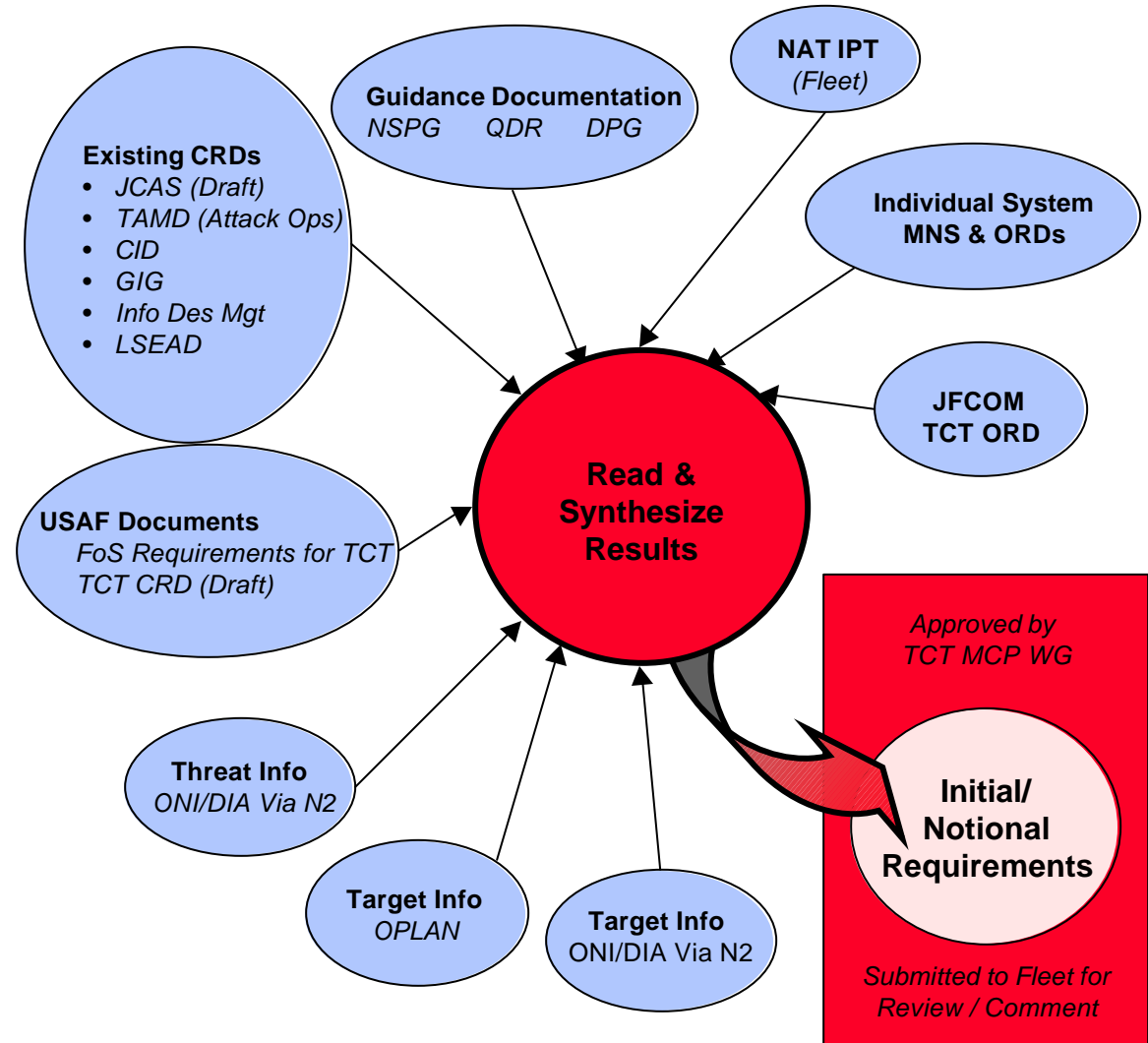


TST CRD Development

Joint Air Force/Navy Collaboration

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- There is no formal Time Sensitive Targeting Capstone Requirement Document (CRD)
- Naval TST MCP Working Group developed a draft Requirement Statement this year in order to frame analysis
- Draft Requirement Statement has been submitted to Naval Afloat Targeting IPT for review and comment

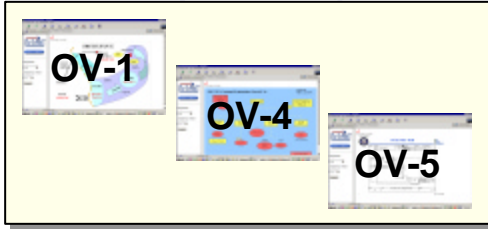




Using Architectures in Systems Engineering & Acquisition

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Concept Development

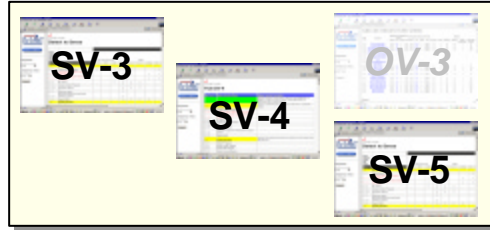


Lesser

The Role of Engineering and Technology

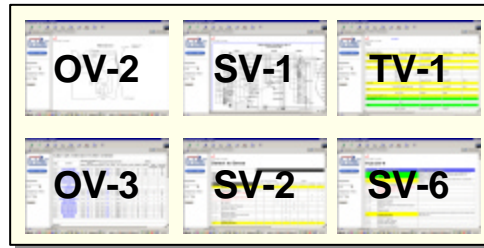
Greater

System Functional Mapping



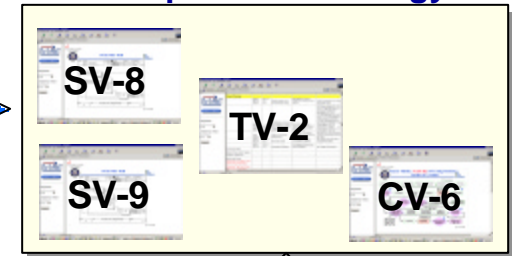
1st Order Analysis:
Functionality

System Interface Mapping and Assessment

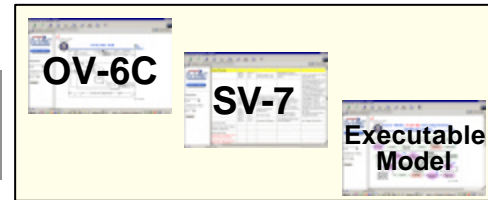


2nd Order Analysis:
Static Interoperability

Acquisition Strategy



Architecture Performance and Behavior



3rd Order Analysis:
Dynamic Interoperability

- CV-6 Capabilities Evolution Description
- OV-1 High-level Operational Concept Graphic
- OV-2 Operational Node Connectivity Description
- OV-3 Operational Information Exchange Matrix
- OV-4 Command Relationships Chart
- OV-5 Activity Model
- OV-6C Operational Event/Trace Description
- SV-1 System Interface Description
- SV-2 Systems Communication Description
- SV-3 Systems Matrix
- SV-4 System Functionality Description
- SV-5 Operational Activity to System Function Traceability Matrix
- SV-6 System Information Exchange Matrix
- SV-7 System Performance Parameters Matrix
- SV-8 System Evolution Description
- SV-9 System Technology Forecast
- TV-1 Technical Architecture Profile
- TV-2 Standards Technology Forecast

Architectures Provide the Framework for FoS/SoS Systems Engineering & Acquisition

Note: There are dependencies between the Architecture products that are not shown in the System Engineering flow. Many of the products are developed concurrently.



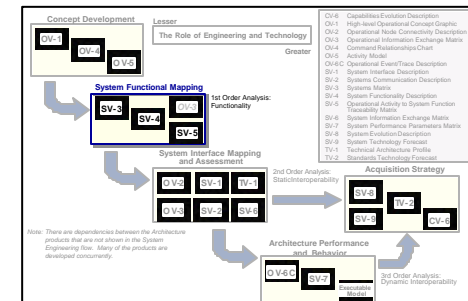
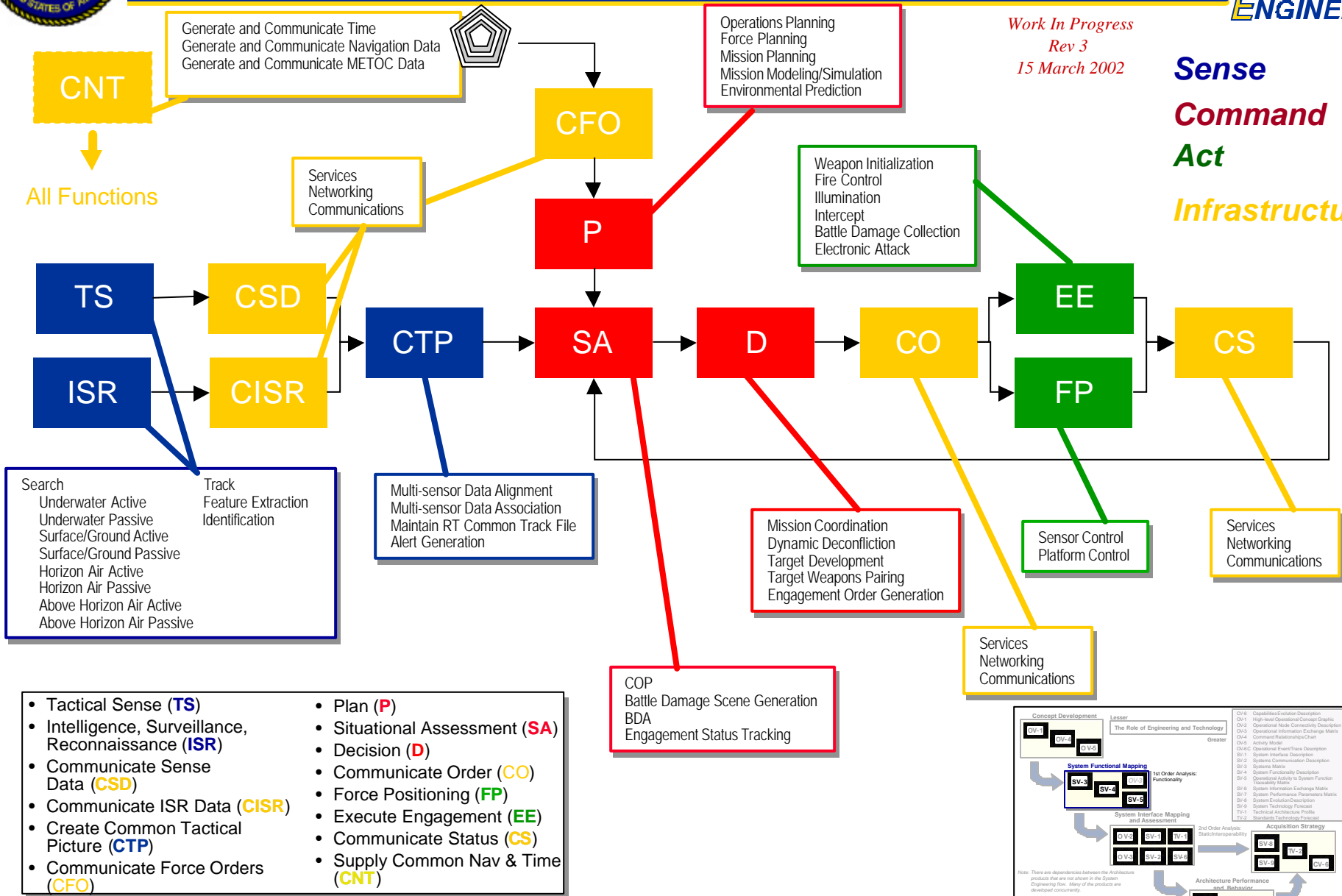
System Functional View (SV-4) [2001-2015]

Preliminary 3rd Level Decomposition

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Work In Progress
Rev 3
15 March 2002

Sense
Command
Act
Infrastructure





TST Capability Evolution Description

Program Alignment To Mission Capabilities

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Preliminary Draft

Capability Objectives

Time Sensitive Targeting (TST)

- Fixed
- Relocatable/Mobile
- Moving

Capability
Increments

Network PoR

GCCS-M 5.0
Naval Fire Control Sys
Naval Fires Network

Sensor PoR

SHARP
AESA
ATR

Programs of Record
(what's being integrated)

Weapons PoR

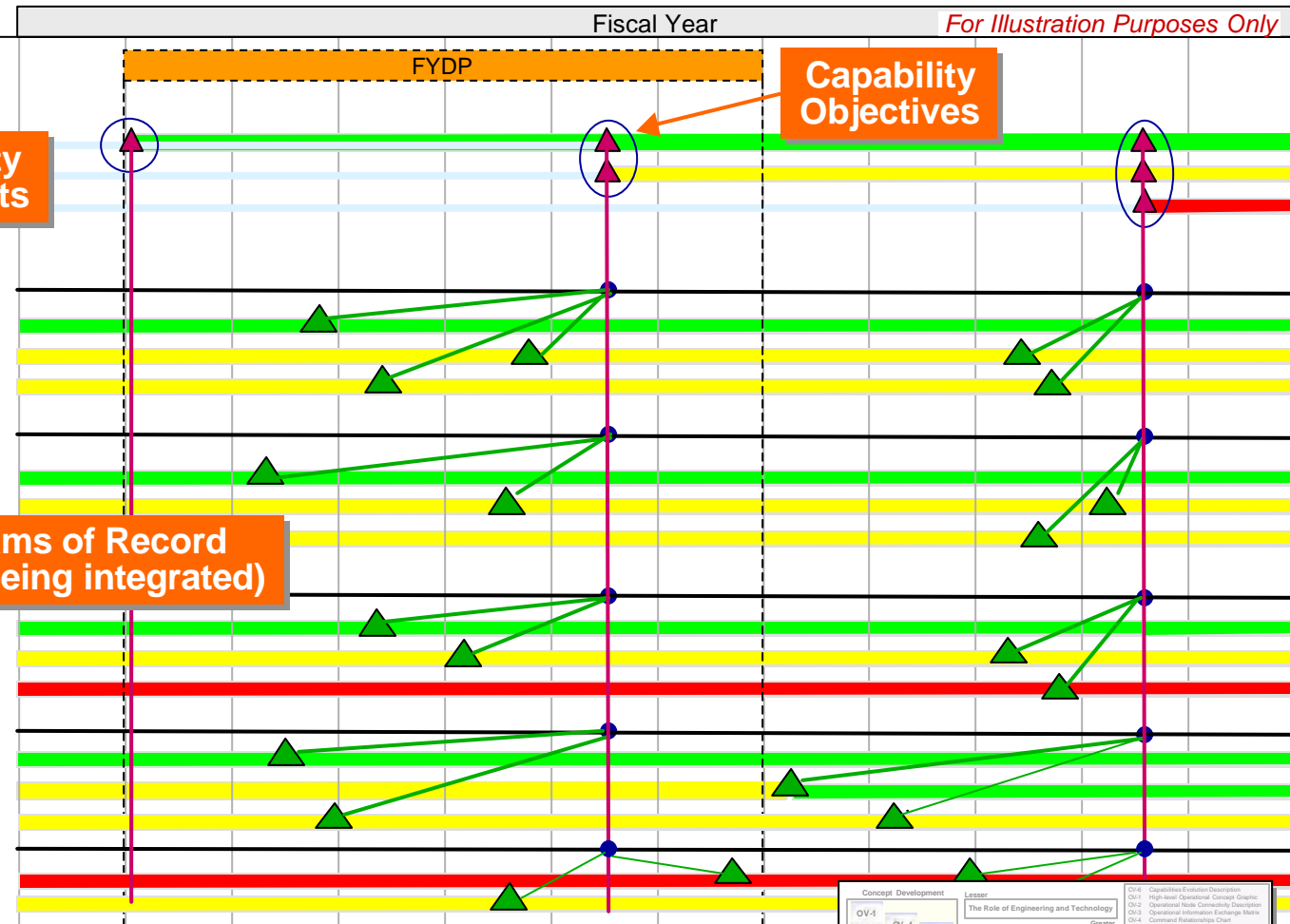
Joint Standoff Weapon
Tactical Tomahawk
FLAM

Platforms PoR

DDG-51
Joint Strike Fighter
E-2C Group II

S&T Initiatives

Maritime Strike Targeting (Link 16)
Hyperspectral Imaging System

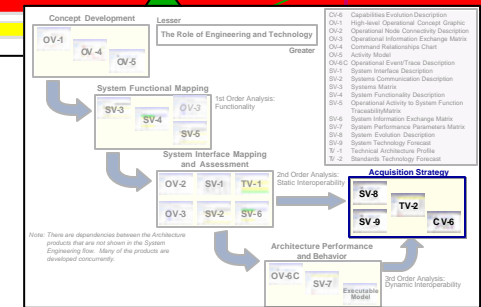


Acronyms

AESA Active Electronically Scanned Array
ATR Automated Target Recognition
CED Capability Evolution Description
FLAM Future Land Attack Missile
GCCS-M Global Command and Control System - Maritime
GMTI Ground Moving Target Indicator/
SHARP Shared Reconnaissance Pod

Color Legend

Green – Likely to support requirements,
no critical or substantive issues
Yellow – May support requirements,
substantive but no critical issues
Red – Unlikely to support requirements,
critical issues or funding shortfalls





Summary

- The TST MCP Is a Pilot Project in the New Capabilities Based Naval Enterprise Process
- The End-to-End Architectural Methodology Has Been Used for the POM 04 TST MCP - But with Limitations in Scope
- Some Key Functionality and Interoperability Needs Identified in the Naval TST Acquisition Strategy:
 - Link Upgrades, (e.g. Airborne Weapon Mission Updates)
currently not funded
 - Naval Fires Network (NFN)
will be discussed in second NDIA case study